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LANL Regular Employee Population and Demographics, FY15-21

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Executive Summary

This document summarizes an effort to compile and analyze the LANL regular employee population's demographic attributes and trends between FY15-FY21 using MicroStrategy, a web-based data analytics and visualization tool. LANL's HR Division collected and prepared data for the Weapons Program's annual reporting activities for the 2017 through 2023 NNSA Stockpile Stewardship and Management Plan (SSMP). Los Alamos workforce data represent the fiscal year-end snapshot of the permanent employee population who are categorized by the Common Occupational Classification System (COCS). This work enables further analyses, including trends for all workforce attributes presented in the SSMPs as well as a definition of a crosswalk between COCS categorization and the internal laboratory job classification hierarchy. Data for other sites and the federal workforce, as shown in the SSMPs, are included and corresponding figures can be visualized within the MicroStrategy tool. A portable, Excel-based version of the tool was developed and shared with the multi-site workforce working group.

This summary highlights selected aspects of the LANL regular workforce. The data analyses and visualizations communicate insights within three major themes regarding permanent LANL employees: 1) demographic transformation, 2) attrition, and 3) skills. Regarding demographic transformation, and consistent with the general trend across the enterprise, early career regular employees are the fastest growing group, with growth ranging between 12-34% year-to-year over the seven-year period analyzed. The data also reflect effects of internal and external factors on attrition; the large spike in separations in FY18 aligns with the contract transition from LANS to Triad and the dip in attrition between FY20-FY21 is likely a result of the global pandemic. The population of regular employees in general management, engineer, and operator COCS categories have the fastest growth rates amongst all the occupational categories. The MicroStrategy and Excel tools provide additional details and trends.

Introduction

Each Fiscal Year (FY) the Department of Energy's National Nuclear Security Administration (DOE/NNSA) reports on the organization's plan to sustain and modernize the U.S. nuclear weapons stockpile and the Nuclear Security Enterprise (NSE) with their tools, capabilities, and infrastructure through the Stockpile Stewardship and Management Plan (SSMP) [1]. The SSMP outlines to Congress the activities being performed in the DOE/NNSA's national laboratories to support the nuclear security mission. As part of LANL's stewardship of the weapons program, regular employee workforce data and selected metrics are submitted annually to this report. The following document includes regular status workforce information over the last seven fiscal years (FY15-FY21). The extracted data and corresponding figures from the SSMP reports were recreated for record, with further analysis to gain insights into the trends and demographic transformation of the LANL workforce.

LANL Workforce and SSMP Regular Employee Reporting

The LANL workforce includes all personnel associated with the laboratory, encompassing both regular employees (part-time and full-time) and other appointment types who perform work for the laboratory (contractors, students, post doctorate students, limited term employees, visiting staff, craft, and lab associates). For FY21, the regular appointment employee population (headcount of 9,677) makes up about 2/3 of the total laboratory workforce (headcount of 13,494¹).

Workforce Reporting: Standardized System for the SSMP vs. LANL Internal WF

For SSMP workforce reporting, only the regular employee type is required for the annual update to NNSA. This selection criterion is chosen for consistency across the federal and eight Management and Operating (M&O) sites. The SSMP utilizes the DOE Common Occupational Classification System (COCS) to sort employees by occupation [2]. This approach allows for a consistent look at the complex workforce of the NSE; the occupation titles and descriptions included in the COCS cover the broad range of activities present in the DOE. This standardized categorization system can be mapped to the variety of skills and job classes across the sites performing both weapons design and manufacturing activities.

The nine COCS categories include operators, craft, laborers, general management, general administrators, professional administrators, technicians, scientists, and engineers. LANL does not classify employees as laborers, as these employees are Union Craft and not part of the regular appointment type. LANL job titles can be linked to a COCS category. Examples of LANL job titles that map to the COCS are shown in **Table 1**.

Table 1. Example job titles for FY21 illustrate the range of specialties included in each COCS category. This is not a comprehensive list.

COCS Category:	Example LANL Job Titles:
Operators	Production Control Specialist 2, Nuclear Materials Specialist 1, HPC Data Center Specialist 3
Craft	Machinist 5, Special Materials Machinist 5
Professional Administrators	Professional Staff Assistant 2, SCIF Security Specialist 4, Health Physicist 3
General Management	R&D Manager 4, Associate Laboratory Director, Work Control Planner 2
General Administrators	Administrative Assistant 4, Accounting Assistant 4, Materials Management Support 3
Scientists	Scientist 4, Software Developer 3, Waste Management Coordinator 2
Technicians	Radiation Control Tech 2, Designer/Drafter 5, Operator 4
Engineers	R&D Engineer 2, Architect 1, GIS Specialist 3
Laborers	N/A

The COCS reporting approach has been useful to view general attributes and trends for the NNSA workforce. LANL and other sites use different approaches for mapping employees to the COCS, so further breakdown into

¹ The total headcount for FY21 excludes the affiliate worker type and the CON-OTHER type appointment group.

site-specific job families and job functions is needed to clarify differences in categorization across sites. The crosswalk between COCS categories and job titles as defined by the LANL Human Resources (HR) Division in **Table 1** promotes a better understanding of site job functions and skills. The mapping for LANL data is included in the MicroStrategy tool.

LANL Regular Employees – Year-end Snapshots

For this work, records of historical information (FY15-FY21) from the federal database system (DOE iPortal) were compiled into three Excel workbooks and uploaded to MicroStrategy, a web-based analysis and visualization software; LANL workforce demographics and trends were then reproduced and analyzed. Appendix B reproduces charts from the workforce section of the SSMP. The laboratory’s population and demographic information is presented here for review. Figures include employees by COCS category, age, years of service, and career stage as well as separations by age and years of service. As discussed, the FY21 data was collected for preparation of the FY23 SSMP. This document is under review and is not yet released.

The regular LANL headcount for FY21 is 9,677 employees. Their distribution across the COCS categories is shown in **Figure 1** below. Scientists, general management, and engineers comprise 22%, 18%, and 17% of the total headcount, respectively. Professional administrators have the highest population at 24% of the total regular employee count. The top three most populated job titles within this category for FY21 include Professional Staff Assistant 2, Computing Systems Professional 2, and Superintendent 3. It is important to note, LANL’s laborers and most craft are Union Craft employees who are not categorized as permanent career employees, and thus, excluded from this report. This approach is not unique to LANL; other M&O sites have similar practices.

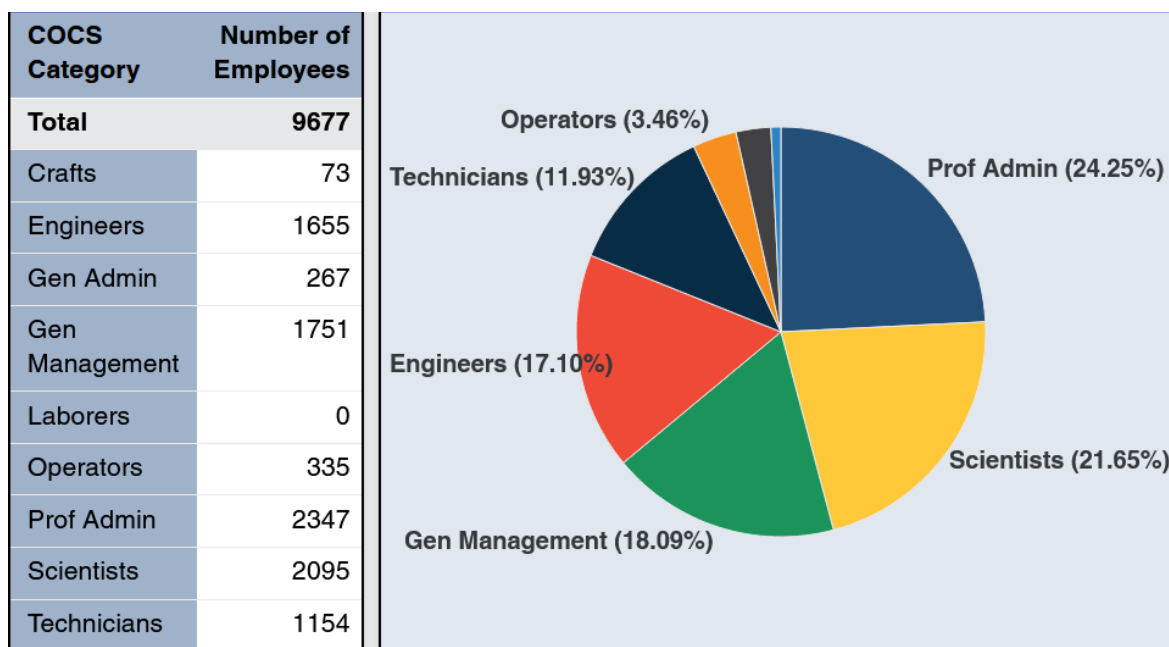


Figure 1. LANL regular employees by COCS for FY21. LANL does not categorize employees into the laborers occupational category.

MicroStrategy provides useful functionalities to visualize workforce information for any given year with the click of a simple filter. This approach enables quick access to data and prevents having to sort through previous SSMP reports to extract desired information. The compilation and management of data in MicroStrategy allows for easy inclusion of future data calls and additional internal work to integrate with laboratory financial and operational information. In parallel, an Excel-based tool was also developed to mirror the effort and provide broader user access and portability of workforce data for joint planning with the NNSA workforce working group.

LANL Regular Employees – Yearly Trends

Data over time presents the population changes and demographics which reflect the impacts of hiring, attrition, and other external factors. The regular employee headcount by COCS category over the seven-year period is shown numerically in **Table 2** and graphically in **Figure 2**.

Table 2. Regular LANL employee headcount for FY15-FY21 for each COCS occupational category. LANL does not classify employees into the ‘laborers’ category.

COCS Category	Number of Employees						
	2015	2016	2017	2018	2019	2020	2021
Total	6701	7120	7556	7876	8472	9109	9677
Crafts	58	55	58	65	73	68	73
Engineers	899	1018	1135	1223	1349	1512	1655
Gen Admin	199	215	245	256	247	267	267
Gen Management	1097	1142	1215	1259	1359	1534	1751
Laborers		0	0	0	0	0	0
Operators	225	242	249	254	288	286	335
Prof Admin	1794	1884	1918	2016	2145	2239	2347
Scientists	1705	1790	1867	1886	2029	2096	2095
Technicians	724	774	869	917	982	1107	1154

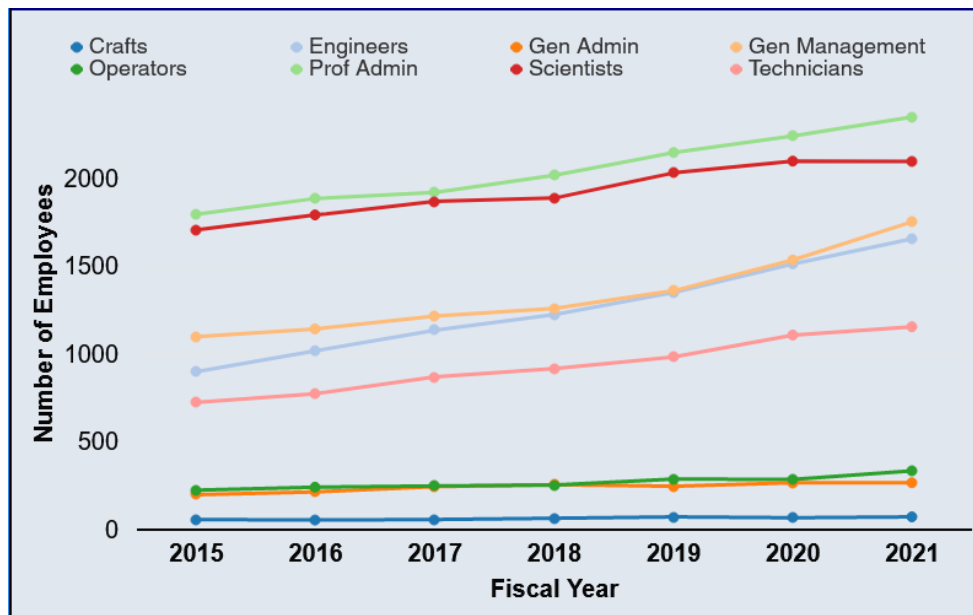


Figure 2. Regular LANL employee headcount by COCS over FY15-FY21.

The programmatic demands of the laboratory affect COCS category headcounts. Operators saw an increase in population of 17% between FY20-FY21. Within this category, the most populated job title is a Production Control Specialist (20% population growth between FY20-FY21). Other categories that experienced growth in the same period were general management and engineers, with a 14% and 9% increase, respectively. The increases in population for these three COCS categories are consistent with the laboratory’s pit production mission. As shown in **Figure 2**, professional administrators have maintained the highest population of regular employees over the analyzed period and growth for this category has remained somewhat linear. Professional administrators support

the range of work at the laboratory; the observed growth tracks well with other COCS categories. Also of important note, the regular employee population is consistent with the laboratory budget growth over the same seven-year period.

The historical trends for the demographic attributes highlighted in the SSMP can be visualized in the MicroStrategy dashboard, expanding on the single year snapshots published each year. Those figures include trends in employee age, length of service, career stage, age-sorted separations, and length of service-sorted separations. All trend figures can be found in Appendix C: LANL Regular Workforce Trend .

Trends in regular employee attrition denote the effect of historical events on the workforce. As shown in **Figure 3**, a large spike in attrition was observed in FY18, the year of the LANS to Triad transition. Additionally, 123 separations were a result of the transfer of the Environmental Management Contract from LANS to N3B for this particular year. The dip from FY19-FY21 reflects both the correction for early retirement from the contract transition as well as COVID-19 impacts. There is a small increase in voluntary separations for FY21 that is attributable to this pandemic.

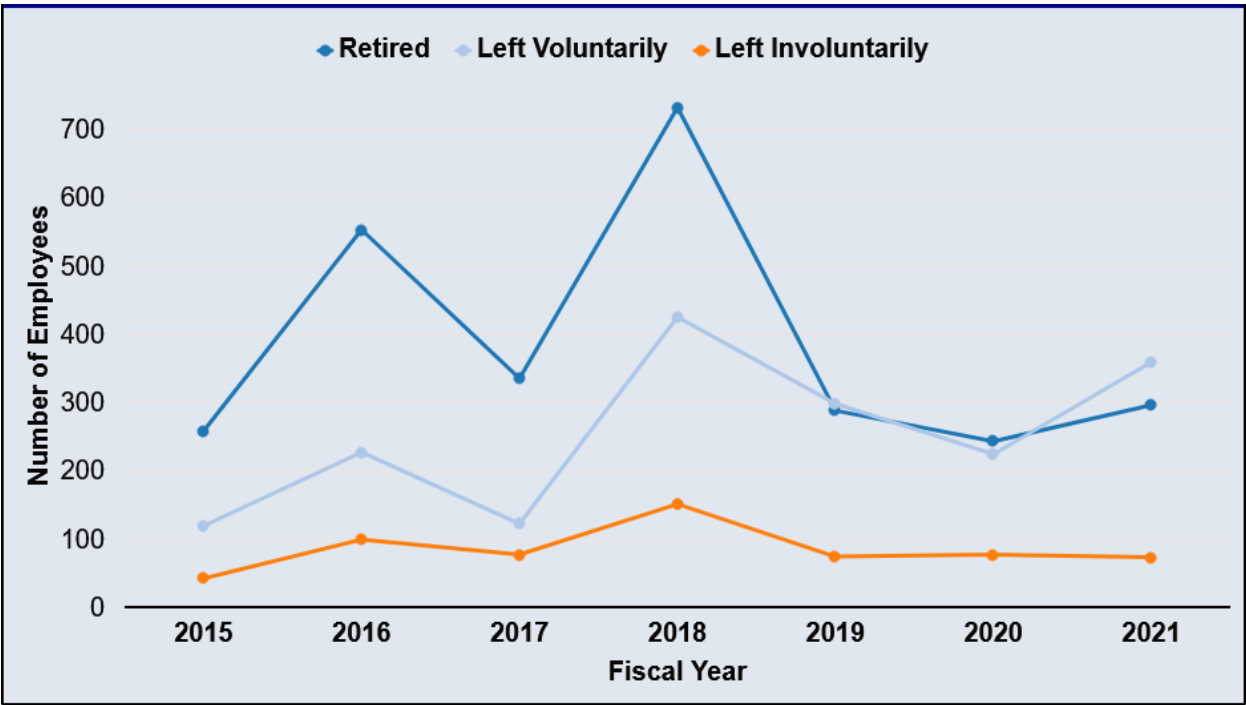


Figure 3. Employee separations sorted by retirements (dark blue), voluntary leave (light blue), and involuntary leave (orange) over FY15-21.

In addition to traditional charts such as bar and line charts, MicroStrategy enables data analysis and visualization with a wide range in chart selection. The *slope chart*, shown in **Figure 4**, illustrates quantitative change in headcount by career stage over the selected time period. This career stage definition is one of several metrics used to collect data for the SSMP.

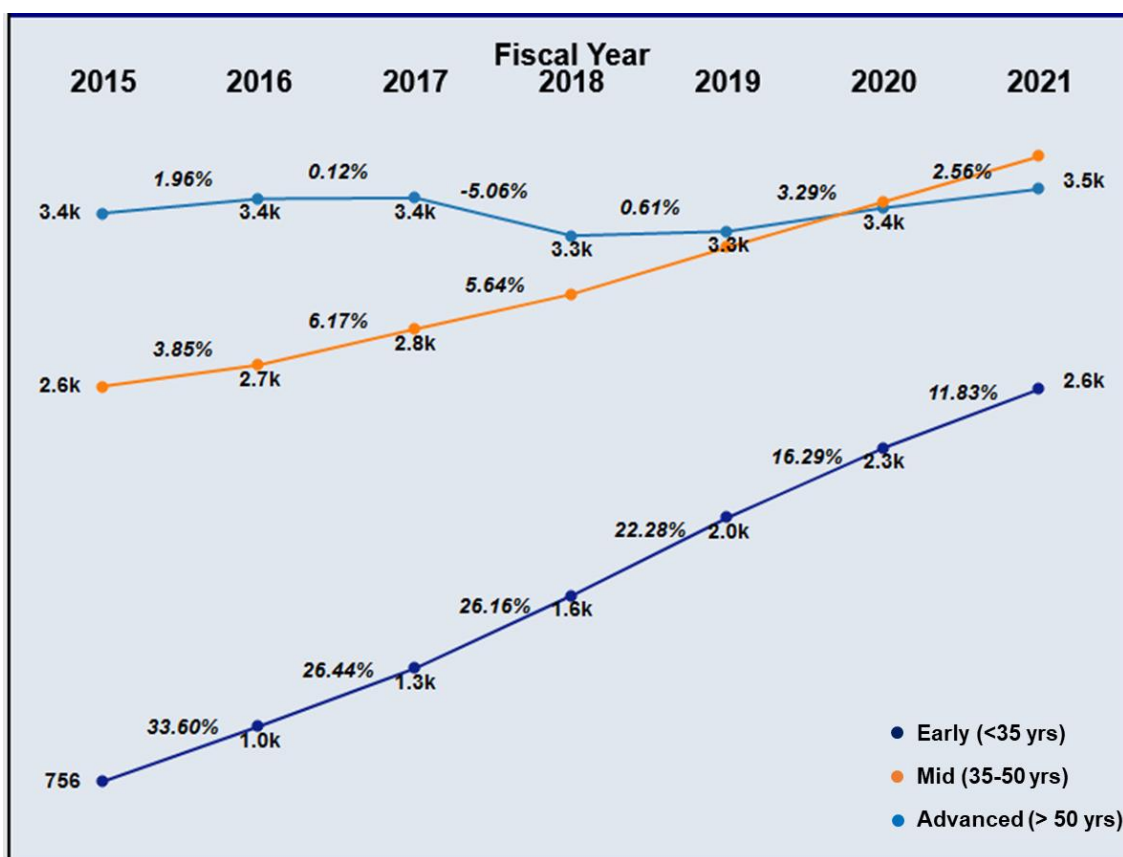


Figure 4. Headcount by early (dark blue), mid-(orange), and advanced (light blue) career stages over FY15-FY21. The percent variation in headcount between each fiscal year is shown in bold for each career stage.

The early, mid- and advanced career stages represent the population of regular employees of an age less than 35, between 35-50, and greater than 50 years old, respectively. Early career employees have maintained significant growth in population as compared to mid- and advanced career stages as demonstrated in **Figure 4**, with a maximum growth rate of 34% between FY15-16. This data clearly reflects laboratory hiring goals resulting in increased early career and mid-career staff populations. From FY21 HR data, 49.6% of hires were early career. Growth in mid-career staff is due to early career hires of previous years transitioning to mid-career staff positions, a lower attrition rate within this career stage, and slight increases in the proportion of mid-career new hires.

LANL's Workforce Beyond SSMP Regular Employee Headcount

The regular appointment employee population (FY21 headcount of 9,677) excludes about 1/3 of LANL's total workforce (FY21 headcount of 13,494²). Employees with appointment types of contractors, limited term, craft, student, postdoc, and lab associate were not included in the preceding information.

The crosswalk between the SSMP COCS categorization framework and the LANL job classification and hierarchy is also of interest. A simplistic illustration of the LANL job hierarchy for FY21 is shown in **Figure 5**. Job category represents the broadest level of job categorization at LANL, with 12 unique groups (ex. Administration, Craft, Information Technology, Research & Development, Student). Job family refers to a group of jobs with a similar function or purpose (ex. Human Resources, Science & Engineering, Security, Project Management). Job function groups jobs with the same title (ex. Program Manager, Quality Assurance Engineer, Radiation Control Technician). Job title is most specific, including job title and levels within each title (ex. Radiation Control

² The total headcount for FY21 excludes the affiliate worker type and the CON-OTHER type appointment group.

Technician 3, R&D Engineer 1, Program Manager 4). The number of elements within each grouping of the hierarchy may change over time to reflect an evolving Laboratory skill set.

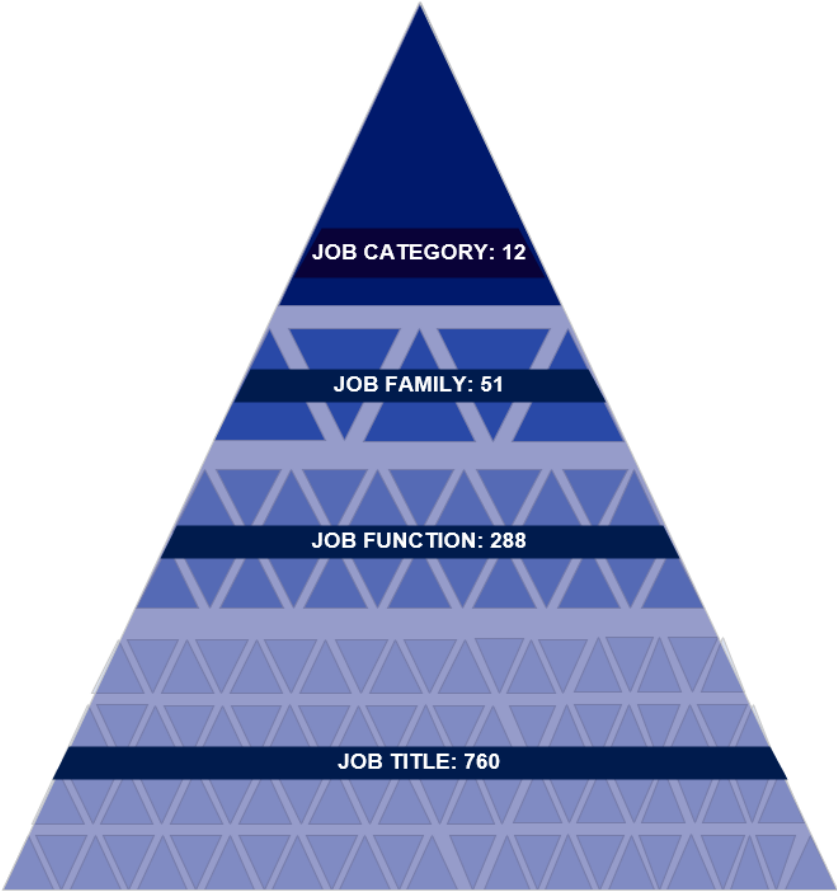


Figure 5. The job hierarchy at LANL classifies employees by job category, family, function, and title. The counts represent the number of unique items within a given level for FY21.

A crosswalk between LANL job title and COCS categorization aligns with prior HR work to capture the categorization for the LANL workforce beyond SSMP numbers. Job category and COCS category do not align 1:1, thus alignment of job titles within COCS was mapped in a crosswalk by HR to view employees by both COCS codes and the LANL job hierarchy structure. The use of the crosswalk expands the breadth of workforce analysis beyond that of regular employees, enriching the understanding of the characteristics of LANL’s entire workforce.

SSMP Workforce Data for the Nuclear Security Enterprise

The LANL specific dashboard created for regular employee workforce data was mirrored in a separate dashboard to include all eight M&O sites and the federal workforce. Over 40 individual Excel workbooks detailing site submissions for the workforce section of the SSMP were collected, condensed, and imported into MicroStrategy. This dashboard allows the user to select a given year of data at any one of the NSE sites (federal and eight M&O sites) for each figure of the SSMP workforce section. This selection enables users to view an integrated picture of the NSE workforce.

The use of MicroStrategy to visualize compiled data for FY17-FY23 SSMPs makes sitewide data more accessible. By centrally locating information for all NSE sites, the ability to make site-to-site comparisons is now feasible. The data and additional work in collaboration with other sites will be valuable.

Future Plans

The LANL workforce MicroStrategy tool was a valuable exercise in data compilation, review, and development of an interactive illustration of the laboratory regular employee population over the past seven years. Now that the data is in a centralized location, it can be linked to other internal data sources to further analyze the trends, skills, and other attributes associated with the workforce. The consolidation of the SSMP data for other sites and the federal staff will be useful in communicating demographic trends across the complex and to foster further collaboration. It is expected the Excel version of this work will contribute to that effort. The SSMP workforce working group has already reconvened to review the tool and explore further topics in this area.

This effort will be extended to include other appointment types (contractors, students, post doctorate students, limited term employees, visiting staff, craft, and lab associates) to highlight the entire laboratory workforce. Information regarding COCS categories for the entire workforce is a natural extension. One of the drivers for this work is the on-going discussion within the SSMP workforce working group on opportunities to expand the scope of the annual data call. Integration of this workforce information with other programmatic data, such as weapons budget or major program schedules would also be a valuable extension. Collaborative interactions are underway.

References

1. “Stockpile Stewardship and Management Plan (SSMP).” Energy.gov, National Nuclear Security Administration, Mar. 2022, <https://www.energy.gov/nnsa/articles/stockpile-stewardship-and-management-plan-ssmp>.
2. Stahlman, E J, and Lewis, R E. Common occupational classification system - revision 3. United States: N. p., 1996. Web. doi:10.2172/243454.

Appendix A: Acronyms and Abbreviations

Acronym	Definition
COCS	Common Occupational Classification System
CON-SE	Contractor – Supplemental Effort
CRFT	Craft
DOE	Department of Energy
HR	Human Resources
KCNSC	Kansas City National Security Complex
LABA	Lab Associate
LANL	Los Alamos National Laboratory
LIMIT	Limited Term
LIMIT-FN	Limited Term – Foreign National
LLNL	Lawrence Livermore National Laboratory
LTVSM	Long-term Visiting Staff Member
M&O	Management and Operating
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NSE	Nuclear Security Enterprise
PTX	Pantex Plant
SNL	Sandia National Laboratory
SRS	Savannah River Site
SSMP	Stockpile Stewardship and Management Plan
WF	Workforce
Y-12	Y-12 National Security Complex

Appendix B: LANL Regular Workforce in FY21

This appendix presents data for the LANL regular employee population for the most recent year of data, FY21. The charts recreate the SSMP workforce figures for LANL, utilizing COCS categories and demographic metrics as included in the SSMP report.

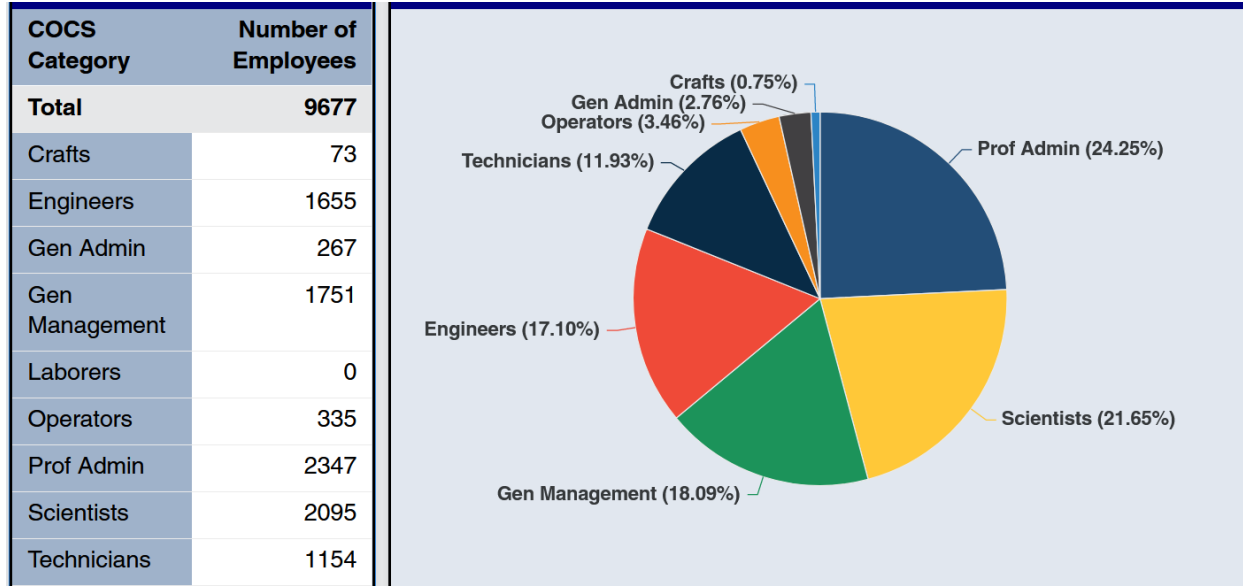


Figure B-1. LANL headcount by COCS categories for FY21.

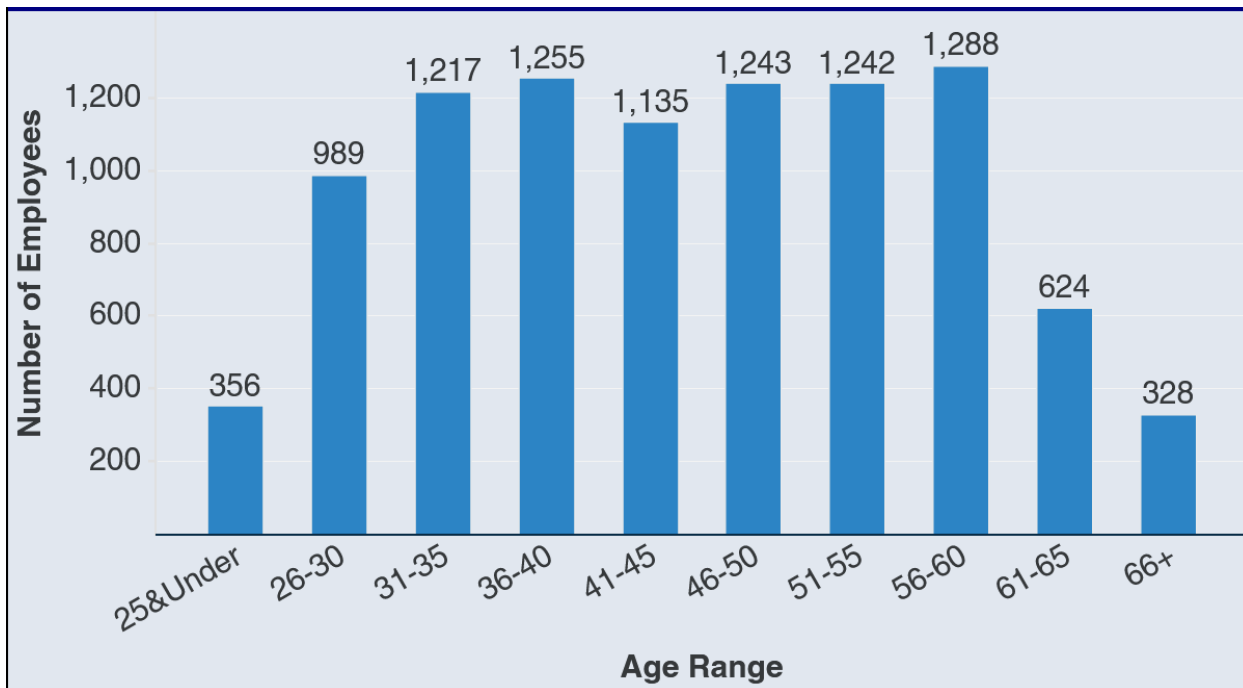


Figure B-2. LANL headcount by age for FY21.

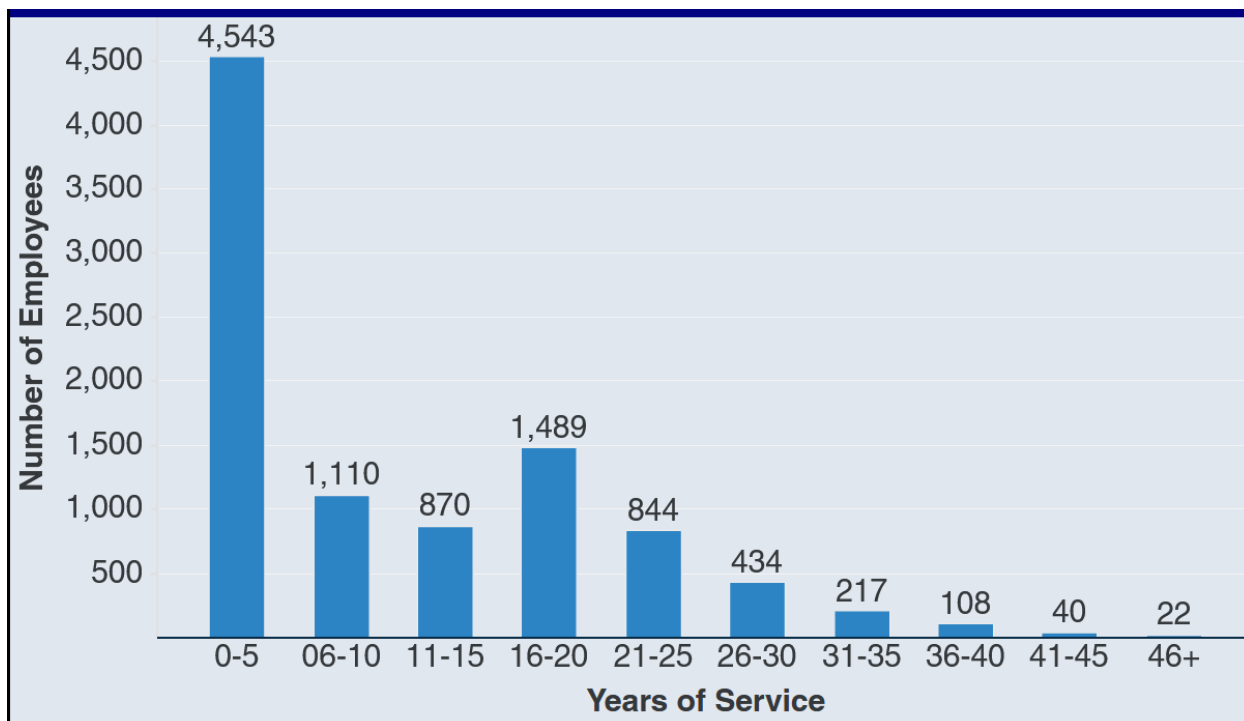


Figure B-3. LANL headcount by years of service range for FY21.

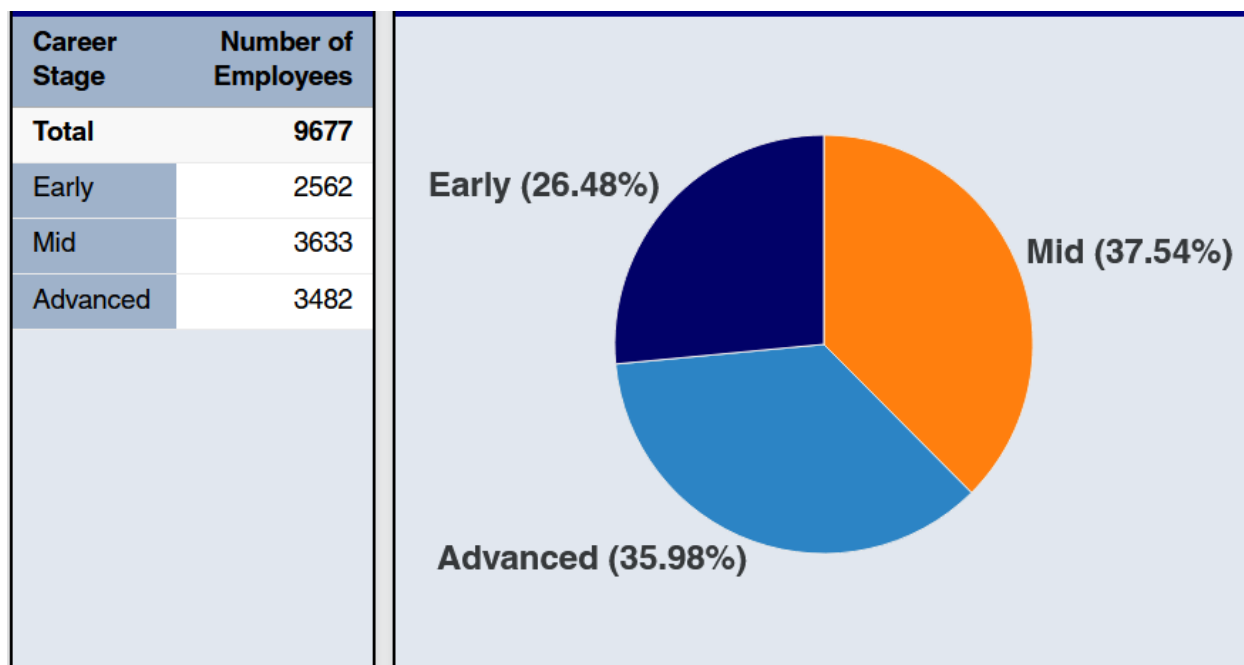


Figure B-4. LANL headcount by career stage.

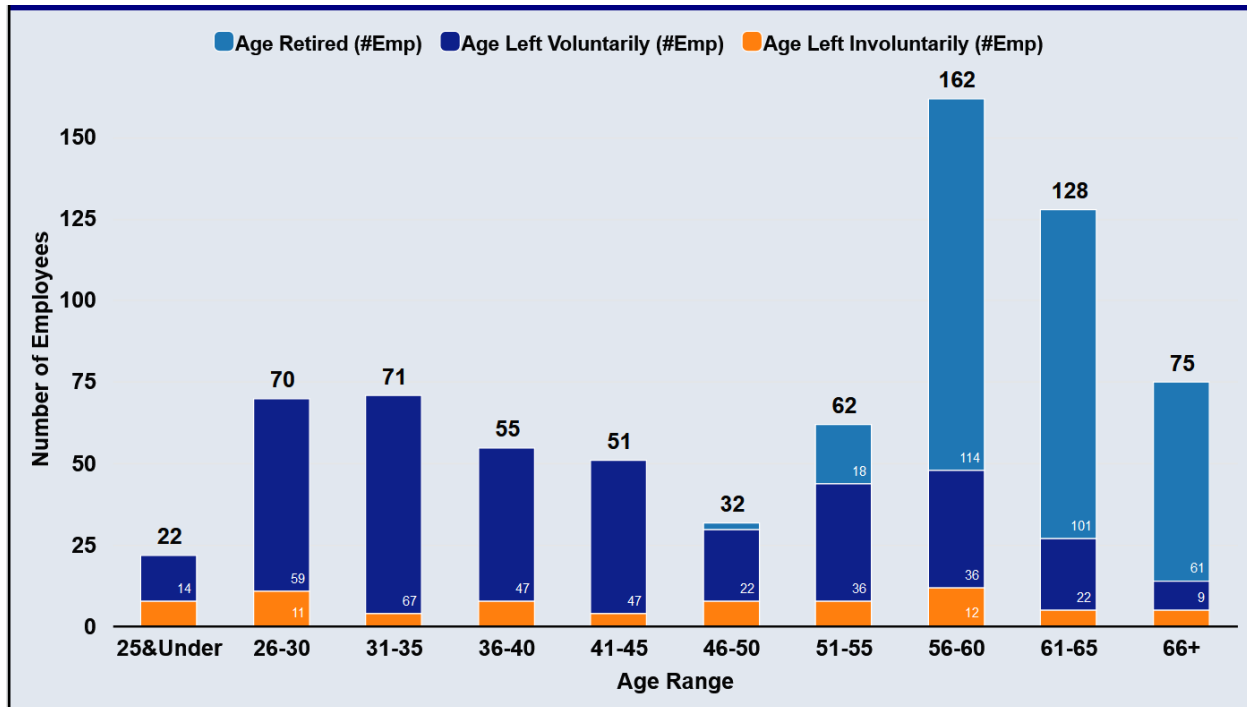


Figure B-5. Employee separations by age group for FY21.

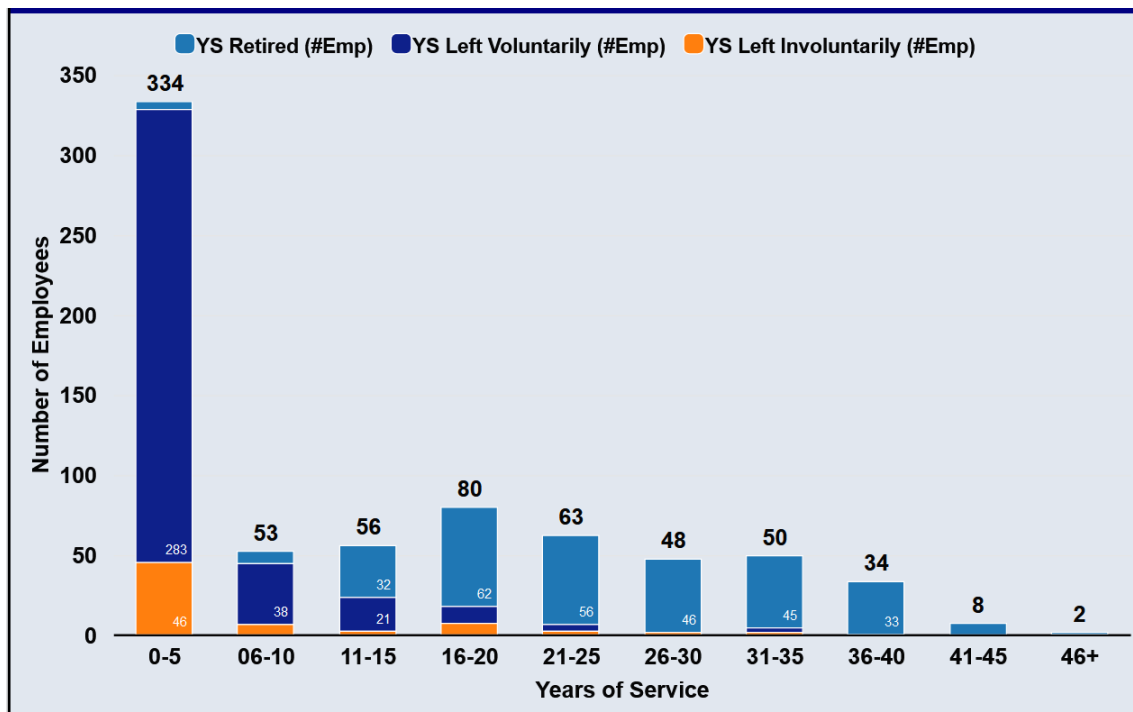


Figure B-6. Employee separations by length of service for FY21.

Appendix C: LANL Regular Workforce Trend Between FY15-21

This appendix presents the LANL regular employee population between FY15-21. The charts are presented using the SSMP framework based on COCS categories and demographic metrics.

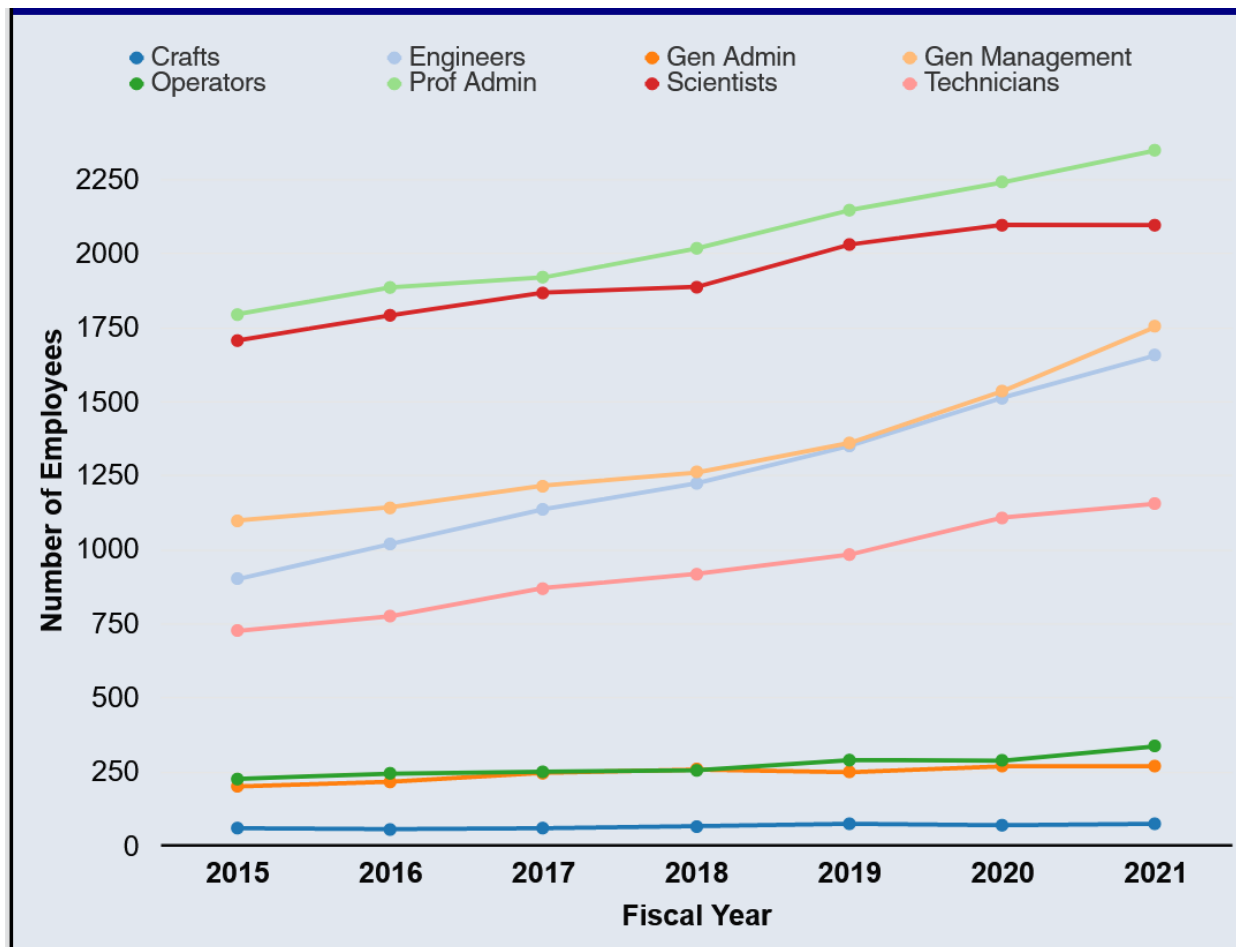


Figure C-1. Trends in employee headcount by COCS for FY15-21.

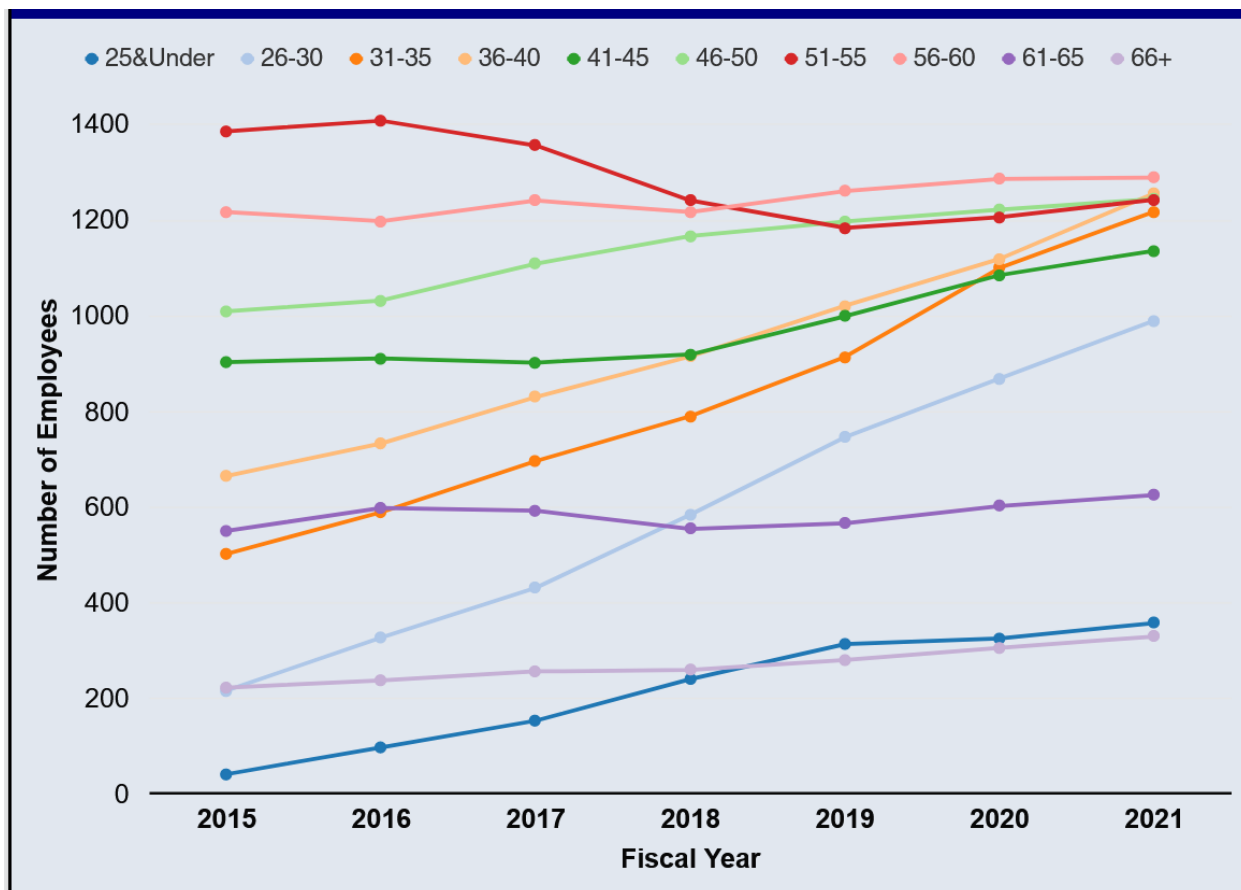


Figure C-2. Trends in employee headcount by age group for FY15-21.

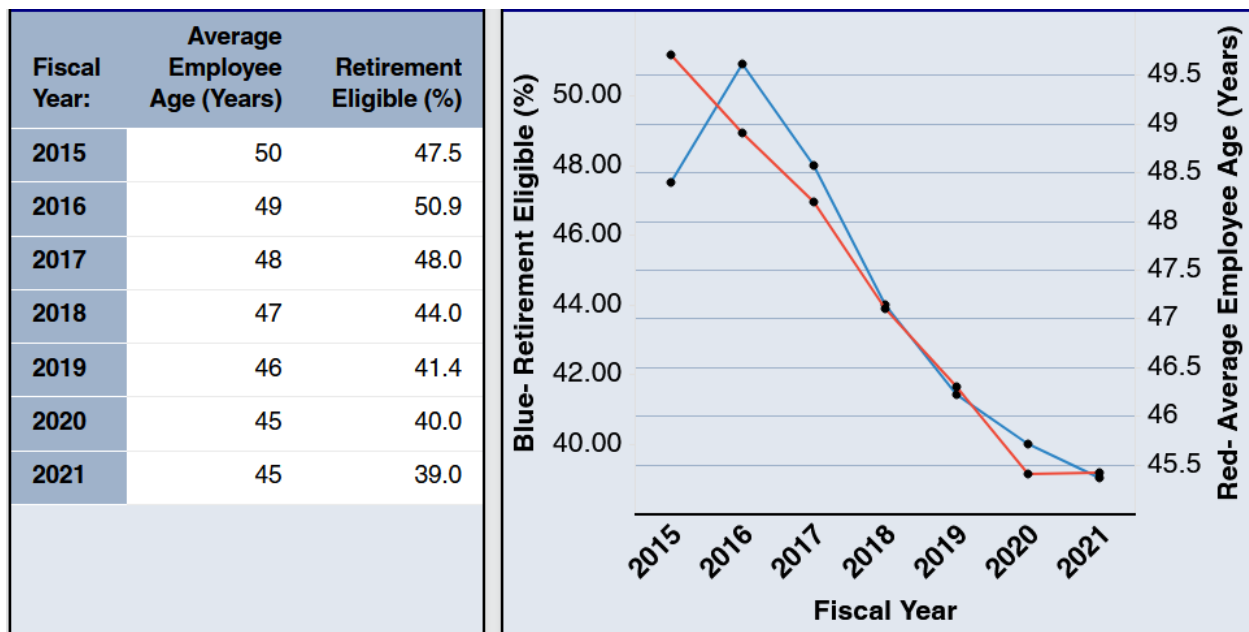


Figure C-3. Trend in average employee age and percent retirement eligible for FY15-21. Employees of age 50+ are considered retirement eligible.

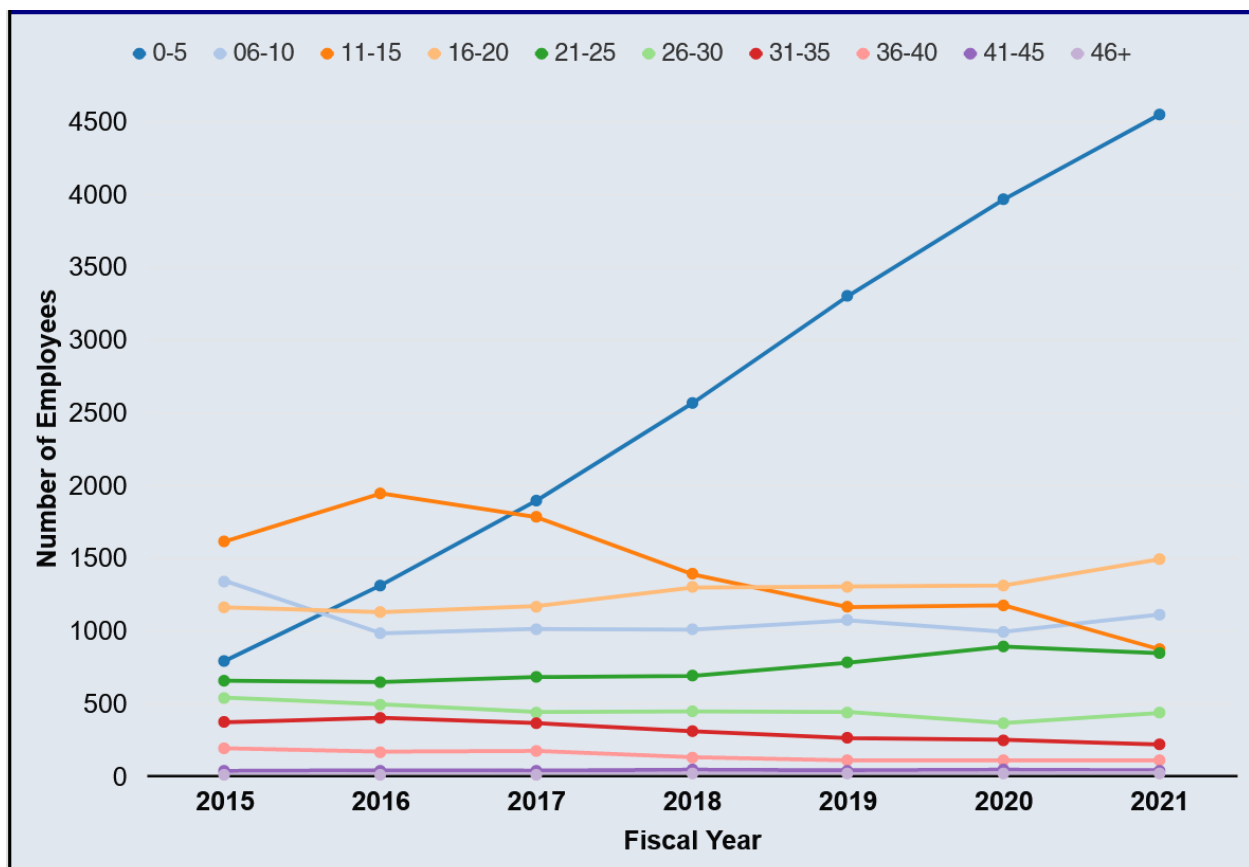


Figure C-4. Trend in headcount by length of service for FY15-21.

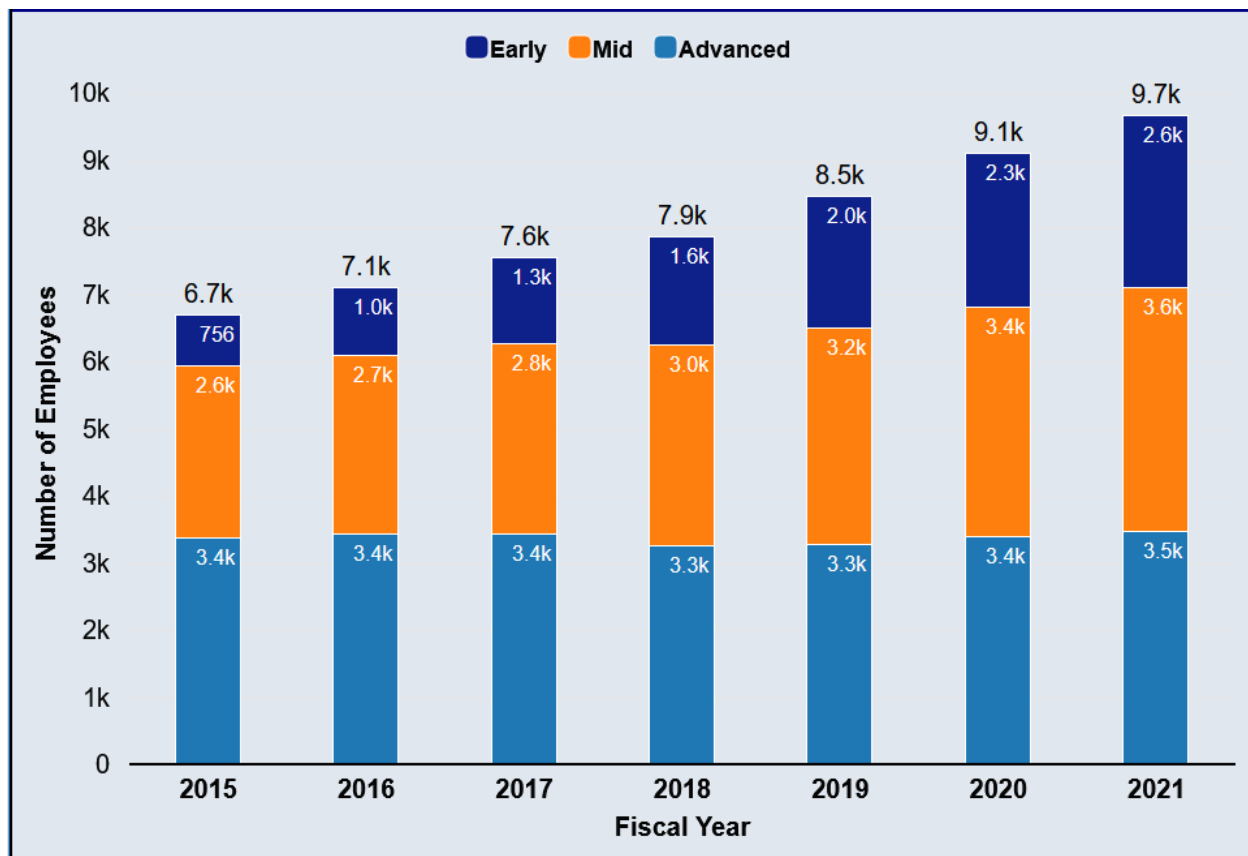


Figure C-5. Trend in headcount by career stage for FY15-F21.

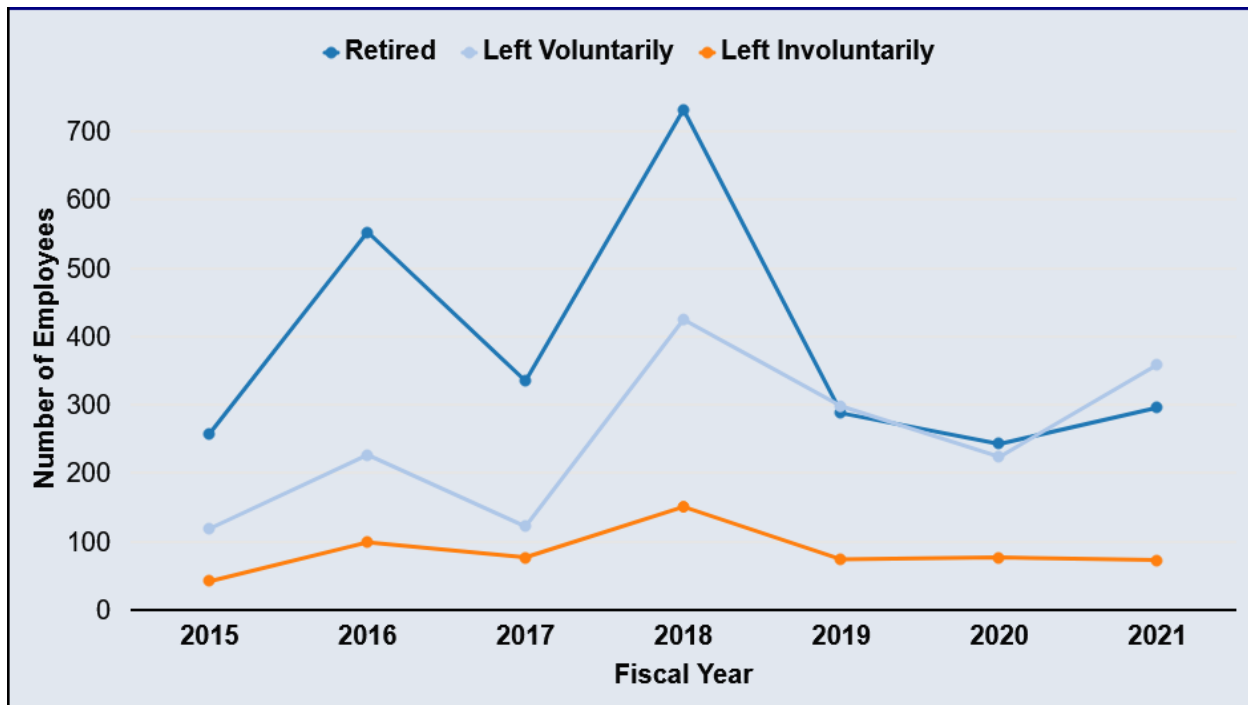


Figure C-6. Trend in employee separations from FY15-21. Note: Data regarding trends for separations by age and length of service are available upon request.